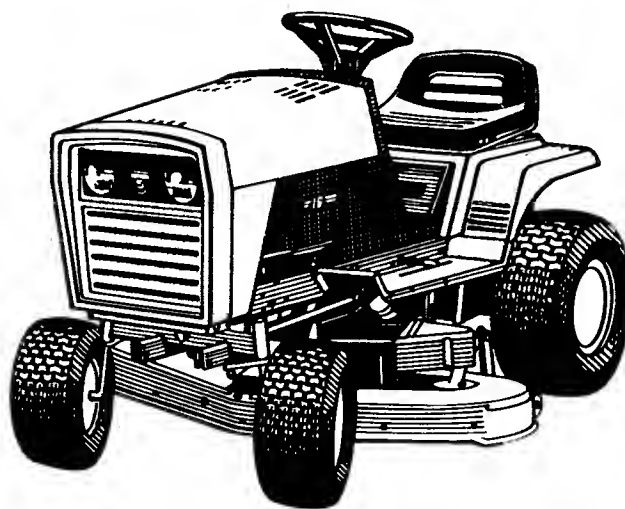


MODEL 613H & 616H TRACTOR

OPERATOR'S MANUAL

**DEUTZ
ALLIS**



616 Hydro

1691085

1691086

1691087 w/36" Mower

1691088 w/42" Mower

1691116 w/48" Mower

613 Hydro

1691236

1691237

1691254 w/36" Mower

1691264 w/42" Mower

Mowers

36" 1691128

42" 1691129

48" 1691130

Part No. 1679797

8/86

2117
2118
2119

TO OUR DEALER

DEALER'S PRE-DELIVERY SERVICE GUIDE DETAILS OF ITEMS LISTED BELOW ARE COVERED IN THIS MANUAL		DEALER'S DELIVERY SERVICE GUIDE EXPLAIN TO YOUR CUSTOMER THE CARE, SAFE OPERATION AND ADJUSTMENT OF ITEMS LISTED BELOW:
<p>CHECK BEFORE OPERATING UNIT</p> <p><input type="checkbox"/> Shipping Damage Corrected</p> <p><input type="checkbox"/> Fill Battery with Electrolyte & Fully Charge</p> <p><input type="checkbox"/> Engine Oil Level Checked (Add When Needed)</p> <p><input type="checkbox"/> Hydrostatic Oil Level Checked</p> <p><input type="checkbox"/> Transmission Oil Level Checked</p> <p><input type="checkbox"/> Check & Tighten Steering Wheel</p> <p>OIL LEAKS</p> <p><input type="checkbox"/> Tractor Operated</p> <p><input type="checkbox"/> Check for Oil Leaks After Engine Warms Up</p> <p><input type="checkbox"/> Check for Transmission Oil Leaks</p> <p><input type="checkbox"/> Check for Hydraulic Oil Leaks</p> <p>ENGINE</p> <p><input type="checkbox"/> Check Timing</p> <p><input type="checkbox"/> Check High & Low Idle Speeds</p> <p><input type="checkbox"/> Check Governor Response</p> <p><input type="checkbox"/> Air Cleaner Properly Installed</p>	<p>COOLING SYSTEM</p> <p><input type="checkbox"/> Check Cooling Fins for Damage or Obstruction</p> <p><input type="checkbox"/> Check Engine Shrouds for Obstruction</p> <p>POWER TRAIN</p> <p><input type="checkbox"/> Brake & Clutch Adjusted Properly</p> <p><input type="checkbox"/> All Belts Adjusted Properly</p> <p><input type="checkbox"/> Safety Switches Adjusted Properly</p> <p><input type="checkbox"/> P.T.O. Clutch Adjusted Properly</p> <p><input type="checkbox"/> Hydrostat Adjusted Properly</p> <p><input type="checkbox"/> Unit Operated Properly in all Gears</p> <p>GENERAL</p> <p><input type="checkbox"/> All Grease Fittings Lubricated</p> <p><input type="checkbox"/> Front & Rear Tire Pressure Set</p> <p><input type="checkbox"/> Traction Operation Checked</p> <p><input type="checkbox"/> Appearance of Tractor Checked</p> <p><input type="checkbox"/> All Safety & Operational Decals in Place</p> <p><input type="checkbox"/> Operator's Manual with Tractors</p>	<p><input type="checkbox"/> CONTROLS</p> <p>OPERATION</p> <p><input type="checkbox"/> Starting Engine</p> <p><input type="checkbox"/> Stopping Engine</p> <p><input type="checkbox"/> Starting Tractor</p> <p><input type="checkbox"/> Stopping Tractor</p> <p><input type="checkbox"/> Operating with Mower and Other Implements</p> <p><input type="checkbox"/> OPERATOR'S SAFETY PRECAUTIONS</p> <p>LUBRICATION & SERVICE</p> <p><input type="checkbox"/> Engine Oil</p> <p><input type="checkbox"/> Engine Fuel</p> <p><input type="checkbox"/> Transmission</p> <p><input type="checkbox"/> Grease Fittings</p> <p><input type="checkbox"/> Air Cleaner</p> <p><input type="checkbox"/> Engine Cooling Fins</p> <p><input type="checkbox"/> Battery Care</p> <p><input type="checkbox"/> Tire Pressure</p> <p><input type="checkbox"/> Service Parts</p> <p><input type="checkbox"/> Off-Season Storage</p> <p>ADJUSTMENTS</p> <p><input type="checkbox"/> Seat</p> <p><input type="checkbox"/> P.T.O. Clutch</p> <p><input type="checkbox"/> Clutch & Brake</p> <p><input type="checkbox"/> Belts</p> <p><input type="checkbox"/> Mower</p> <p><input type="checkbox"/> Other Implements</p>

TO OUR CUSTOMER

The following pages and illustrations are printed to help supply you with the knowledge to better operate and service your new **DEUTZ-ALLIS** equipment.

We are proud to have you as a customer and feel you will be proud to be a **DEUTZ-ALLIS** owner.

Any piece of equipment needs, and must have a certain amount of service and maintenance to keep it in top running condition. We have attempted to cover all the adjustments required to fit most conditions; however, there may be times when special care must be taken to fit a condition.

Study this operator's manual carefully and become acquainted with all the adjustments and operating procedures before attempting to operate your new equipment. Remember, it is a machine and has been designed and tested to do an efficient job in most operating conditions and will perform in relation to the service it receives.

If special attention is required for some conditions, ask your **DEUTZ-ALLIS** Dealer; his Parts and Service Organization will be glad to help and answer any questions on operation and service of your new machine.



**ATTENTION! BECOME ALERT!
YOUR SAFETY IS INVOLVED!**



This symbol is used to call your attention to safety precautions that should be followed by the operator to avoid accidents. When you see this symbol - Heed Its Warning.

USER'S RESPONSIBILITY

It is the responsibility of the user to read the Operator's Manual and understand the safe and correct operating procedures as pertains to the operation of the product, and to lubricate and maintain the product according to the maintenance schedule in the Operator's Manual.

The user is responsible for inspecting his machine and for having parts repaired or replaced when continued use of the product would cause damage of excessive wear to other parts. It is the user's responsibility to deliver his machine to a Deutz-Allis dealer, for service or replacement of defective parts which are covered by the standard warranty. When requesting warranty service, you must present your copy of delivery record.

If the Dealer is requested by the Customer to travel to another location, or haul the machine to his shop for the purpose of performing a warranty obligation or free inspection, it would be for the Customer's convenience, and the cost for such trips is to be paid for by the Customer. Any arrangement whereby the Dealer agrees to absorb all or a part of the cost of these trips is to be made between the Dealer and the Customer and is to be considered a courtesy to the Customer.

Deutz-Allis does not allow credit for the cost of travel time, mileage, or hauling as a warranty allowance.

WARRANTY. . . .Your Deutz-Allis warranty for any new equipment listed appears on your copy of the Purchase Order signed by you and your selling dealer. You will be required to pay any premium for over-time labor requested by you, any charge for making service calls and for transporting the equipment to and from the place where warranty work is performed. Normal maintenance service and repair work not covered by the warranty during the warranty period and all service after the warranty period will be charged for at the dealer's regular rates and prices.

6/85

**THE DEUTZ-ALLIS NEW EQUIPMENT BATTERY SERVICE ADJUSTMENT POLICY
FOR LAWN AND GARDEN EQUIPMENT**

LIMITED WARRANTY

1. If within a period of 90 DAYS after day of sale to the original user, a Deutz-Allis new equipment battery becomes unserviceable (not merely discharged) in normal use, due to defective material or workmanship, the Deutz-Allis Corporation will replace it with an equivalent new Deutz-Allis battery, without charge, to the original user.
2. If after the expiration of such 90 DAYS but before the expiration of 24 months from date of sale to the original user (each such month being designated herein as a unit of service) a Deutz-Allis new equipment battery becomes unserviceable (not merely discharged) in normal use, due to defective material or workmanship, it will be replaced for the original user, in exchange for the unserviceable battery, with an equivalent new Deutz-Allis battery at an adjusted price. This adjusted price shall be determined by applying to the then current retail price of the new battery, the percentage of the maximum (24) units of service which was received from the unserviceable battery.

LIMITATIONS

No-charge replacements or adjustments under this policy may be made by any authorized Deutz-Allis Lawn and Garden Equipment dealer.

This policy does not cover the following:

1. Unserviceability due to abuse or neglect, failure to maintain recommended electrolyte level, fire wreckage, explosion, freezing, the addition to the battery of any chemical or solution other than approved water or battery grade sulfuric acid of proper gravity, the use of a group size smaller than the group size of the original equipment battery, or continued operation of the battery in an undercharged condition (below half charge - 1.190 sp. gr.).
2. Breakage of containers, covers or posts.
3. The cost of transportation, service calls, recharges or the use of rental batteries.

PROOF OF DATE OF PURCHASE IS REQUIRED FOR ALL CLAIMS. DEUTZ-ALLIS CORPORATION WILL HAVE NO OBLIGATIONS UNDER THIS POLICY IF THE DATE CODING ON THE BATTERY IS REMOVED OR DESTROYED. IN NO EVENT WILL DEUTZ-ALLIS CORPORATION BE LIABLE FOR CONSEQUENTIAL DAMAGES.

L & G 7/85

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NOTE

In this manual "left" and "right" are referred to as seen from the operating position.

Safety Rules



Read these safety rules and follow them closely. Failure to obey these rules could result in loss of control of vehicle, severe personal injury to yourself or bystanders, or damage to property or equipment. The triangle  in the text signifies important cautions or warnings which must be followed.

- Know the controls and how to stop quickly. **READ THIS OPERATOR'S MANUAL** and instructions furnished with attachments.
- Do not allow children to operate the machine. Do not allow adults to operate it without proper instruction.
- Do not carry passengers. Do not mow when children and others are around.
- Clear the work area of objects (wire, rocks, etc.) that might be picked up and thrown.
- Disengage all attachment clutches and shift into neutral before attempting to start the engine (motor).
- Disengage power to attachments and stop the engine (motor) before leaving the operator's position.
- Disengage power to attachments and stop the engine (motor) before making any repairs or adjustments.

- Disengage power to attachments when transporting or not in use.
- Take all possible precautions when leaving the vehicle unattended, such as disengaging the power-take-off, lowering the attachments, setting the parking brake, stopping the engine, and removing the key.
- Do not stop or start suddenly when going uphill or downhill. Mow up and down the face of steep slopes; never across the face.
- Reduce speed and exercise extreme caution on slopes and in sharp turns to prevent tipping or loss of control. Be especially cautious when changing direction on slopes.
- Stay alert for holes, rocks, and roots in the terrain and other hidden hazards. Keep away from drop-offs.
- Use care when pulling loads or using

heavy equipment.

- a. Use only approved drawbar hitch points.
 - b. Limit loads to those you can safely control.
 - c. Do not turn sharply. Use care when backing.
 - d. Use counterweights or wheel weights when suggested in this operator's manual.
- Watch out for traffic when crossing or near roadways.
 - When using any attachments, never direct discharge of material toward bystanders or allow anyone near the vehicle while in operation.
 - Handle gasoline with care — it is highly flammable.
 - a. Use approved gasoline container.
 - b. Never remove the fuel cap of, or add gasoline to, a running or hot engine or an engine that has not been

allowed to cool for several minutes after running. Never fill the tank indoors and always clean up spilled gasoline.

c. Open doors if the engine is run in the garage — exhaust fumes are dangerous. Do not run the engine indoors.

- Keep the vehicle and attachments in good operating condition, and keep safety devices in place and in working condition.

- Keep all nuts, bolts, and screws tight to be sure the equipment is in safe working condition.

- Never store the equipment with gasoline in the tank inside a building where fumes may reach an open flame or spark. Allow the engine to cool before storing in any enclosure.

- To reduce fire hazard, keep the engine free of grass, leaves, or excessive grease.

- The vehicle and attachments should be stopped and inspected for damage after striking a foreign object, and the damage should be repaired before restarting and operating the equipment.

- Do not change the engine governor settings or overspeed the engine.

- When using the vehicle with mower, proceed as follows:

- a. Mow only in daylight or in good artificial light.

- b. Never make a cutting height adjustment while the engine (motor) is running if the operator must dismount to do so.

- c. Shut the engine (motor) off when removing the grass catcher or unclogging chute.

- d. Check the blade mounting bolts for proper tightness at frequent intervals.

- Under normal usage, the grass catcher bag material is subject to deterioration and wear. Check bag frequently for deterioration and wear and replace worn bags. Check that replacement bags comply with the original manufacturer's recommendations or specifications.

- Disengage power to mower before backing up. Do not mow in reverse unless absolutely necessary and then only after observation of the entire area behind the mower.

DECALS

ALL WARNINGS, CAUTION, and instructional messages on your tractor and mower should be carefully read and obeyed. Personal bodily injury can result when these instructions are not followed. The information is for your safety and it is important. The safety messages on this page are on your tractor and mower.

 **DANGER**

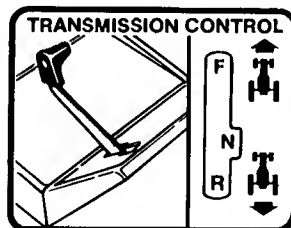
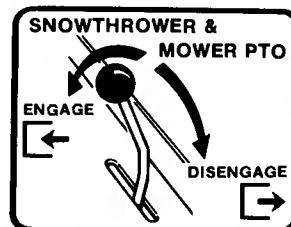



ROTATING CUTTING BLADE

- Do not put hands or feet under mower deck or into discharge chute.
- Do not operate mower without discharge chute or entire grass catcher in place.

Objects may be thrown from mower.

- Clear lawn of debris and objects.
- Do not mow with bystanders in area.

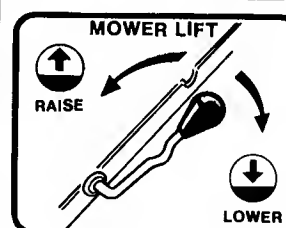
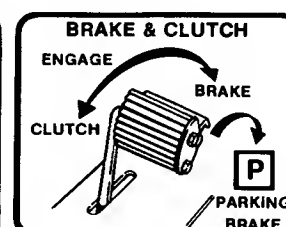



 **CAUTION**

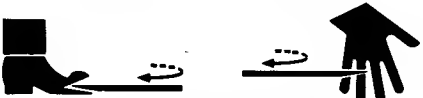
- Before operating, read safety and operating instructions in Operator's Manual.
- Keep all shields in place.
- Keep hands, feet and clothing away from power driven parts.
- Keep people and pets a safe distance from machine.
- Never carry riders.
- Do not operate where machine can slip or tip.
- Look behind machine before backing up.
- To start engine operator must: be in seat, set parking brake, shift transmission into neutral and disengage PTO.

Before leaving operator's position:

- Set parking brake.
- Disengage PTO clutch.
- Shut off engine and remove key.
- Wait for all movement to stop before placing hands or feet near blades.




 **DANGER**




ROTATING CUTTING BLADE

- Do not put hands or feet under or into any part of this mower deck while blade is rotating.



TRANSMISSION ENGAGE

TRANSMISSION DISENGAGE



IMPORTANT: Do not tow tractor. Damage to transmission will result. Disengage transmission to manually push tractor.

Mower Installation & Removal



WARNING

Engage the parking brake, disengage the PTO, stop the engine and remove the key before attempting to install or remove the mower.

NOTE

The lift chain (E, figure 1) should be connected to the rear hole in lift arm (D) unless optional large lift lever (B, figure 8) is used to raise mower. With large lift lever, connect chain in forward hole.

INSTALLATION

1. Place the tractor and mower on a flat, level surface, such as concrete, with the mower on the right side of the tractor.
2. Insert the end of the PTO rod (A, figure 1) from the right-hand side and work the "S" bend (C) around until rod appears as in figure 1.
3. Using the mower height control lever (F, figure 7), place the mower in lowest

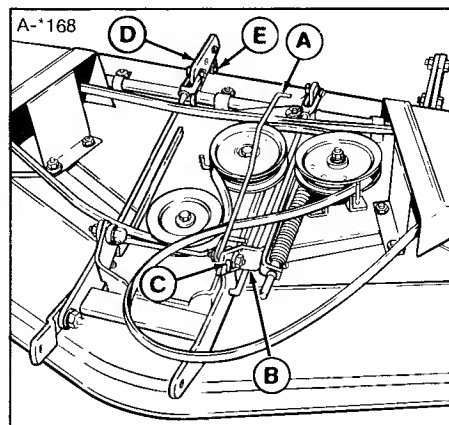


Figure 1. PTO Rod Connection (42" mower shown)

- | | |
|-------------|-----------------|
| A. PTO Rod | D. Lift Bracket |
| B. PTO Arm | E. Chain |
| C. "S" Bend | |

- cutting height.
4. Turn the front wheels toward the left.
5. Place the lift lever fully forward so that lift arm (B, figure 2) is in lowest position.
6. Slide the mower under the tractor so that the lift chain (C, figure 2) is under the lift arm (B).

7. Insert the link (A) into lift arm (B) then pivot back and down. Secure chain (C) to clevis (D) with pin (E) and clip (F). (Early models are equipped with a simple hook instead of clevis assembly shown in figure 2.) If chain has four links, be sure to use only three links.
8. Lift up front of mower and insert pins (F, figure 3) to attach mower hitch arms to tractor hitch (E). (You can insert a pry bar under front edge of deck to raise.)

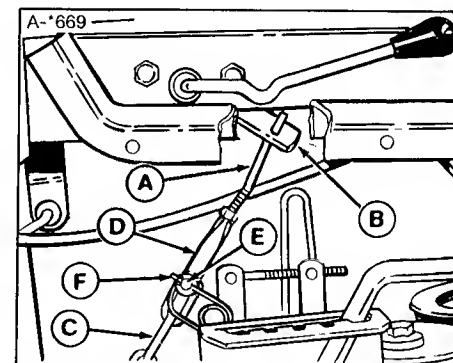


Figure 2. Lift Assembly

- | | | |
|--------------|-----------|---------|
| A. Lift Link | C. Chain | E. Pin |
| B. Lift Arm | D. Clevis | F. Clip |

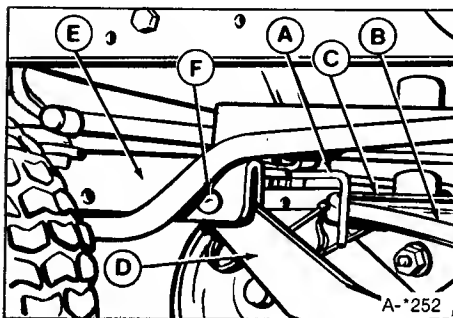


Figure 3. L.H. Belt Stop

- | | |
|---------------|--------------------|
| A. Belt Stop | D. Mower Hitch Arm |
| B. Belt | E. Tractor Hitch |
| C. PTO Pulley | F. Pins |

9. Install the clips (C, figure 4) in the pins.
10. Slip the mower drive belt onto the engine PTO pulley loosening belt stops as necessary. The left-hand belt stop is shown in figure 3. The right-hand belt stop for 42" mowers is shown in figure 5. The right-hand belt stop for 36" mowers is shown in figure 5A. Position belt stops 1/16" from belt.
11. Insert the rear end of the PTO rod in the hole marked "MOW" in the PTO arm (B, figure 6). Insert the spring clip (C).

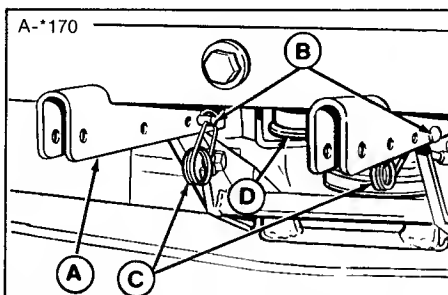


Figure 4. Mower Hitch Attached

- | |
|------------------|
| A. Tractor Hitch |
| B. Pins |
| C. Safety Clips |
| D. Drive Belt |

12. If installing mower for the first time, check the following adjustments.
 - a. Mower belt tension (page 27).
 - b. PTO pulley belt stops (page 27).
 - c. Mower belt stops (page 27).
 - d. Mower levelling (page 28).
 - e. Lift lever (page 30).

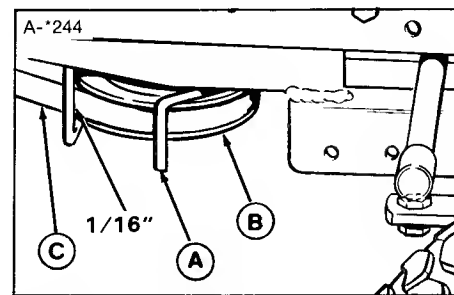


Figure 5. Right-Hand Belt Stop - 42" Mowers

- | | |
|---------------|---------|
| A. Belt Stop | C. Belt |
| B. PTO Pulley | |

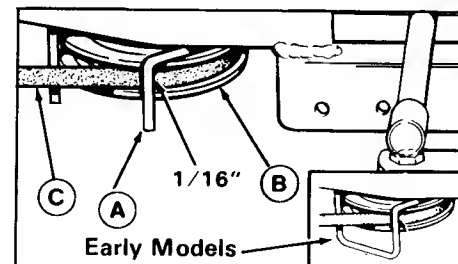


Figure 5A. Right-Hand Belt Stop - 36" Mowers

- | |
|---------------|
| A. Belt Stop |
| B. PTO Pulley |
| C. Belt |

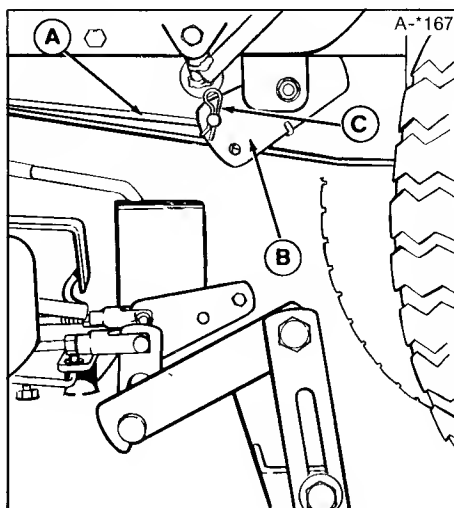


Figure 6. Installing PTO Rod

- A. PTO Rod**
- B. Tractor PTO Arm**
- C. Spring Clip**

REMOVAL

1. Place mower in lowest cutting height. Lower the lift lever. Disengage the PTO lever.
2. Remove the belt from the PTO pulley, loosening belt stops as necessary.
3. Remove the spring clip (C, figure 6) and pull PTO rod from hole. Reinstall the spring clip in the rod for storage.
4. Unhook the lift chain (C, figure 2) from the clevis (D).
5. Pull the safety clips from the hitch pins. Push the pins out while holding mower hitch up then allow mower to drop down.
6. Turn the tractor wheels as far as they go to the left.
7. Slide the mower out from under the tractor from the right side.

OPERATION

CONTROLS

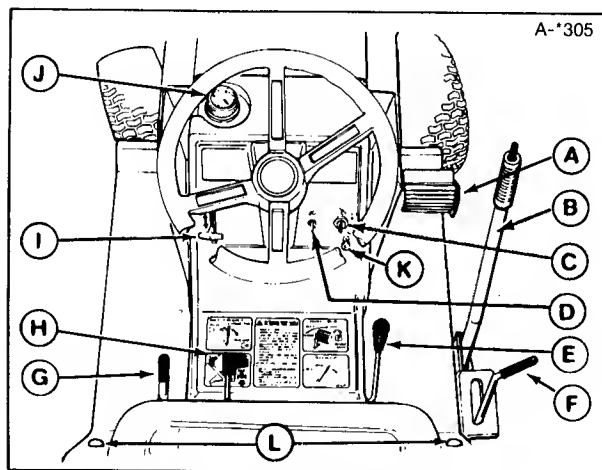


Figure 7. Tractor & Mower Controls

INTERLOCK SWITCHES

These tractors are equipped with a seat switch which will stop the engine if operator leaves seat when PTO is engaged and/or transmission is in gear. Also, switch will prevent starting if operator is not in seat. The transmission must be in NEUTRAL and PTO disengaged to start engine.

Ref.	Name	Function
A	Clutch-Brake	Disengages tractor clutch when pressed down at least halfway. Applies brake when fully depressed. Engages parking brake when latched over footrest.
B	Lift Lever	Lifts and holds attachments in transport position (only required with attachment other than mower).
C	Ignition Switch	Operates with key to start, run, or stop engine.
D	Light Switch	Switches headlights on or off.
E	Lift Lever	Lifts and holds mower in transport position.
F	Mower Height Control Lever	Adjusts mower cutting height.
G	PTO (Power Take Off) Lever	Engages and disengages power to attachments. Pull back to disengage.
H	Transmission Control Lever	Controls ground speed and forward/reverse motion. Push toward left to move out of neutral (center) position. Push down to go forward. Pull up to go rearward.
I	Engine Speed Control	Position from SLOW to FAST to control engine speed.
J	Gas Gauge/Cap	Shows amount of gasoline in the tank and serves as tank cap.
K	Choke	Pull out to aid starting engine.
L	Seat Deck Latch	Press button on each side to tilt the seat deck back.



CAUTION

Do not tow tractor. Transmission damage may result.

PUSHING THE TRACTOR BY HAND

Never push the tractor faster than walking speed. To push, the transmission must be disengaged. To do this, raise the seat deck to expose the transmission engagement lever. Push the lever forward to disengage the transmission. Pull toward left and pull lever back to engage the transmission.

BEFORE OPERATING

1. Refer to Normal Care Chart and perform any needed care.
2. Clear the work area of any objects which may be caught in or thrown by the attachment.

STARTING THE ENGINE

1. Seat yourself on tractor seat, in operating position. Set the parking brake.
2. Place transmission control lever in NEUTRAL. The lever will snap into NEUTRAL notch when moved to center position.
3. Lift the PTO lever fully back to disengage the attachment.

4. Set engine speed control lever in CHOKE position.

5. Insert the key into ignition switch and turn to START. Release when engine starts.
6. Move the throttle out of CHOKE position.

STARTING & STOPPING OPERATION

1. Start the engine as described in previous procedure.
2. Place the engine speed control lever between 3/4 and full speed. Full engine speed is recommended, especially if mowing thick grass or blowing heavy snow.
3. Release the parking brake by depressing pedal and unlatching from end of footrest.
4. If possible, the first motion should be straight forward or back. Position the front wheels straight ahead.
5. To go forward, move transmission control lever to left to move out of neutral then press downward. The farther downward you press, the faster forward ground speed.

To go rearward, move transmission control lever to left to move out of neutral then pull up. The farther upward you pull lever, the faster rearward ground speed.

6. Select the appropriate ground speed for conditions. If the terrain is rough, hilly or sloping, drive slowly. You should also drive slowly to cut thick grass or blow heavy snow. On level ground, with light grass or snow, you can use full speed.
7. Use the transmission control lever to slow down for turns or to trim around objects, then increase speed.
8. **To stop**, move the transmission control lever into NEUTRAL position. **For a more rapid stop**, depress the clutch-brake pedal. If you stop by depressing the pedal, move control lever to NEUTRAL before releasing pedal.
9. Before leaving the operator seat:
 - a. Stop tractor motion and engage parking brake.
 - b. Disengage the PTO and lower the attachment.
 - c. Set engine speed control to SLOW. Stopping a hot engine too fast may

cause engine damage. Let engine idle for about a minute. However, do not idle engine for extended period - it may cause carbon buildup.

- d. Turn key to OFF and remove it.
- e. Place transmission control lever into forward position. This will help prevent accidental starting. The control lever must be in neutral to start.



WARNING

To reduce fire hazard, keep the engine, tractor and mower free of grass, leaves and excess grease.



WARNING

Never operate on slopes greater than 30 percent (16.7°) which is a rise of three feet vertically in 10 feet horizontally. When operating on slopes that are greater than 15 percent (8.5°) but less than 30 percent use rear wheel weights (see your dealer). Select slow ground speed before driving onto slope. Mow up and down the slope, never across the face, use caution when changing directions and **DO NOT START OR STOP.**



WARNING

Before leaving the operator's position for any reason, engage the parking brake, disengage the PTO, stop the engine and remove the key.

MOWING PATTERN & TIPS

For the first use of the mower choose a smooth level area. Cut long straight strips overlapping slightly.

The size and type of area to be mowed will determine the best mowing pattern to use. Obstructions such as trees, fences and buildings must also be considered. Where possible, make one or two passes in a clockwise direction around the outside of the area to keep cut grass off fences and walks. The remainder of the mowing should be done in a counterclockwise direction so the clippings are dispersed on the cut area.

Where possible, keep the left side of the mower toward trees, posts, or other obstacles on the first pass around the obstacles to keep hand trimming to a minimum.

On moderate size, frequently mowed lawns

where grass is light and dry, it is sometimes practical to mow in a clockwise direction so that clippings are thrown toward the center of the lawn and concentrated for pickup and removal.

Most lawns should be mowed to keep the grass approximately two to three inches (50 to 76 mm) high. Best results are obtained by cutting often and not too short. To help keep a green lawn, never mow more than one third off the height of the grass, or a maximum of one inch (25 mm), in one mowing. For example tall grass, set the cutting height at maximum for the first pass, and then reset to the desired height and mow again.

On thick, or springy grass or soft ground, the mower rollers sink into the ground giving too low a cut. Adjust the cutting height as necessary. For best appearance, grass should be cut in the afternoon or early evening (in daylight) where it is free of external moisture.

Where possible, change patterns occasionally to eliminate matting, graining or a corrugated appearance.

Normal Care

DETERMINE OPERATING TIME

Determining operating time is easily accomplished if the tractor is equipped with an optional hourmeter. If not, multiply the time it takes to do one job by the number of times you've done the job.

NORMAL CARE SCHEDULE

A schedule for normal care is provided in Table 1.

RAISING HOOD & SEAT DECK

To raise the hood, grasp both sides of the hood near the dash. Pull sides of hood outward and tilt the hood forward.

To raise the seat deck, position yourself as shown in figure 8. Press both buttons and tilt the seat deck back.

Care Required	Schedule					
	See	Before First Use	Before Each Use	Every 5-Hours	** Every 25 Hours	Yearly or Every 100 Hours
Check gas gauge	P. 13	•	•			
Check tractor & mower for loose nuts, screws, bolts, oil leaks, etc.		•	•	•		
Check engine oil level	Eng. Manual	•	•	•		
Clean engine & air filter	Eng. Manual				•	
Change engine oil*	Eng. Manual				•	***
Lubricate tractor & mower	P. 12, 16	•			•	
Check battery fluid	P. 14	•		•	•	
Clean battery & cables	P. 14					•
Sharpen/balance blade	P. 16					•
Inspect spark plug(s)	Eng. Manual					•
Check fuel filter	P. 14					•
Check tire pressures	P. 15	•			•	
Check transmission fluid	P. 13	•				***
*Change original engine oil after first 5 hours of operation. **More often in hot (over 85°F; 30°C) weather or dusty operating conditions. ***If used year round - check in spring & fall						

Table 1. Schedule of Normal Care - Tractor & Mower

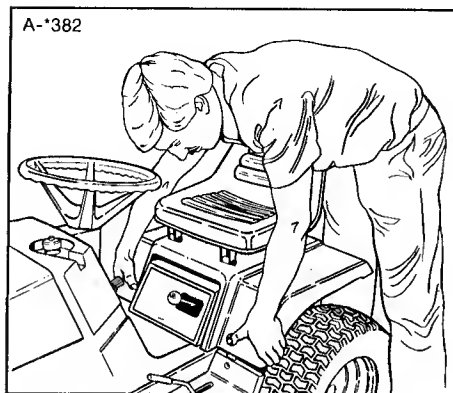


Figure 8. Opening the Seat Deck

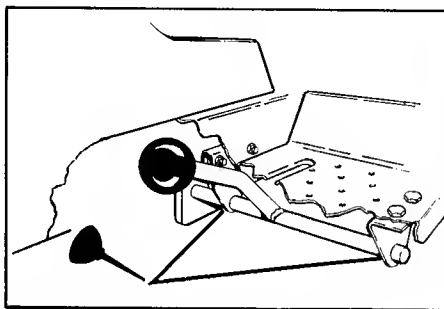
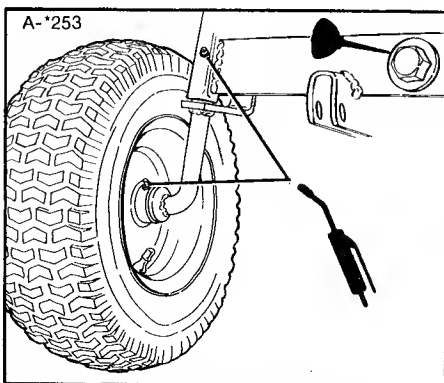
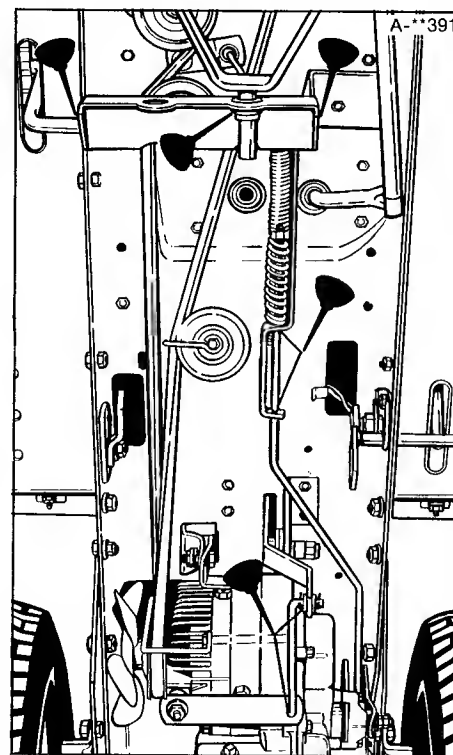


Figure 9. PTO Lever Lubrication



**Figure 10. Front Axle Lubrication
(Two grease fittings on each side)**



**Figure 11. Clutch & Control Rod
Lubrication (underneath tractor)**

LUBRICATING THE TRACTOR

Lubricate the tractor as shown in figure 9 thru 11. When a grease gun is shown, wipe the fitting clean, apply two or three shots of grease and wipe off excess grease. When an oil can is shown wipe the area clean, apply a few drops of oil (SAE 30), then wipe up drips or spills. Keep oil off belt and brake pads.

ADJUSTING THE SEAT

Raise the seat deck. While holding the seat, loosen the four capserews that secure seat to seat deck. Position the seat as desired then tighten the capscrews.

CHECKING/ADDING GASOLINE

Check the gas gauge/cap to be sure there is enough gasoline to complete the job. To add gasoline, remove the gas gauge/cap. Refer to your engine manual for gasoline recommendations. Install and hand tighten the gas gauge/cap.

CHECK TRANSMISSION FLUID LEVEL

There are two fluid levels that must be checked. The Hydrostatic Transmission and the Differential fluid level. Proceed as follows.

Hydrostatic Fluid Level

1. Allow tractor to cool after operation. Fluid must be cool for an accurate check.
2. Raise the seat deck.
3. The fluid level is visible in the reservoir (figure 12) without removing cap. The level should be at COLD level mark. If not, go to step 4.

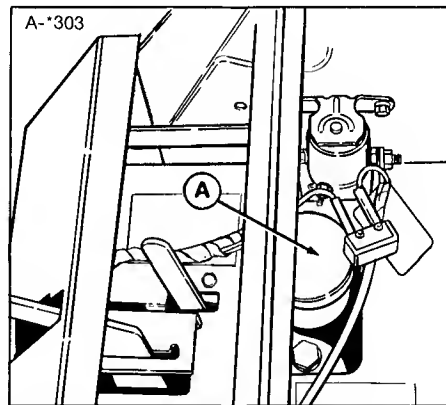


Figure 12. Hydrostatic Reservoir

A. Reservoir

4. Remove the reservoir cap and add to cold level mark. Use Simplicity Multipurpose Hydraulic/Transmission Oil or Deutz-Allis Power Fluid 821. If the existing oil is black or milky, see your dealer to determine cause.
5. It will take a while for the oil to seep thru a filter screen into the transmission. Check the level again after operating tractor a few times. If level is consistently low, see your dealer to check for leaks.

Differential Fluid Level

1. The check plug is located on the front of the differential. For this reason, it would be easier to check the fluid in the spring before installing the mower or in the fall after removing the mower.
2. Remove the check plug (A, figure 13) by turning counterclockwise. If the level is at the bottom of the hole, the fluid level is OK. If not, add oil. Use Simplicity Multipurpose Hydraulic/Transmission Oil or Deutz Allis Power Fluid 821.
3. Reinstall the check plug.

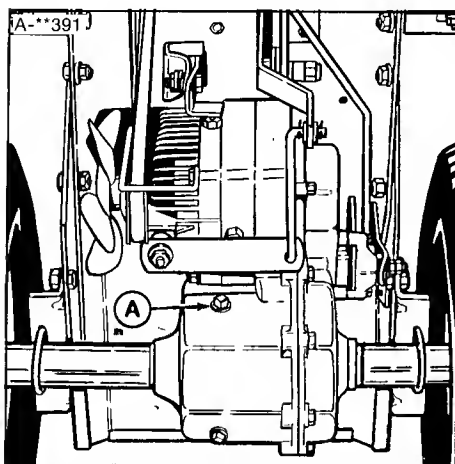


Figure 13. Differential Check Plug

A. Check Plug (viewed from underneath)

CHECKING THE FUEL FILTER



WARNING

Do not remove fuel filter when engine is hot, as spilled gasoline may ignite. Do not spread hose clamps further than necessary. Insure clamps grip hoses firmly over filter after installation.

The fuel filter is located in fuel line between fuel tank and carburetor. If filter is dirty or clogged, replace as follows. Place a container below filter to catch spilled gasoline.

1. Using a pliers, open and slide hose clamps from fuel filter.
2. Remove hoses from filter.
3. Install new filter in proper flow direction in fuel line. Secure by reclamping with hose clamps. See warning at beginning of procedure.

CHECKING BATTERY FLUID

1. Raise the seat.
2. Remove filler caps, one at a time.
3. Fluid must be even with split ring full mark (figure 14). If not, add distilled water.
4. Reinstall filler caps.

CLEANING THE BATTERY & CABLES



WARNING

Be careful when handling the battery. Avoid spilling electrolyte. Keep flames and sparks away from the battery.



WARNING

When removing or installing battery cables, disconnect the negative cable **FIRST** and reconnect it **LAST**. If not done in this order, the positive terminal can be shorted to the frame by a tool.

1. Disconnect the cables from the battery, negative cable first (figure 14).

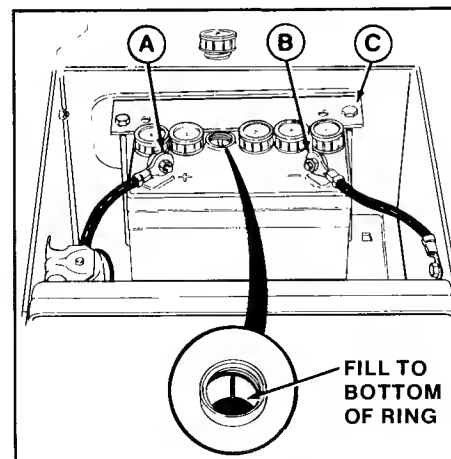


Figure 14. Battery

A. Positive Terminal
B. Negative Terminal

C. Battery Clamp

2. Remove the battery clamp, then remove the battery.
3. Scrub the battery, cables, and battery compartment with baking soda and water.
4. Clean the battery terminals and cable clamps with a wire brush.
5. Reinstall battery and clamp (figure 14).
6. Connect cables, positive cable first.
7. Coat cable clamps and terminals with grease or petroleum jelly.

CHECKING TIRE PRESSURE

Check air pressure of all four tires. Front tires should be 12 to 15 psi. Rear tires should be 6 to 8 psi. A gauge with one-pound markings will be necessary for an accurate check.

TRACTOR NORMAL STORAGE

Clean all grass and dirt from the mower. To protect your tractor, store it in an enclosed dry area. Do not store it in an enclosure where fumes from the fuel tank could reach an open flame. Clean the seat with a vinyl cleaner.

To store your tractor in a cold area between winter snow removal jobs, we suggest that you fill the fuel tank at the completion of each job to prevent water condensation in the fuel tank. Wait for engine to cool before filling tank.

TRACTOR OFF-SEASON STORAGE

When the tractor is to be stored for two months or longer, take precautions as follows:



WARNING

Gasoline is highly flammable. Keep open flame or spark away from gasoline and fuel tank. Never store tractor where gasoline fumes may reach an open flame or spark.

1. To empty or prepare fuel tank:
 - a. Run tractor engine until it stops from lack of fuel, or;
 - b. Use a gasoline stabilizer. This additive, available from your dealer, prevents formation of gum and varnish for up to one year. With the additive, fuel may remain in your tank for long periods.

2. Change engine oil while the engine is still warm. Record the type and weight of oil put in crankcase.
3. Remove spark plug(s). Pour one ounce (30 ml) of SAE 30 oil into engine through spark plug hole(s). Crank engine a few times to distribute oil and then reinstall the spark plug(s).
4. Lubricate the tractor.
5. Check battery fluid level. Battery life will be extended if it is removed and stored in a cool, dry place, and fully charged.
6. Clean tractor thoroughly. Coat all exposed bare metal parts with a good quality paint (obtainable from your dealer) or a light film of grease or oil.

STARTING AFTER STORAGE

1. Replace battery, if removed. Be sure terminals and clamps are clean.
2. Remove the spark plug and wipe dry. Crank engine a few times to blow excess oil out of plug hole. Reinstall the plug.
3. Fill fuel tank with fresh gasoline (unless a fuel stabilizer was used).

4. Clean engine fins and air filter. (See engine manual.)
5. Check fluid levels and tire pressure. (See Normal Care Chart.)
6. Start the engine outdoors. Do not run engine at high speeds immediately after starting.

LUBRICATING THE MOWER

Lubricate the mower as shown in figures 15, 16 and 17. Use an oil can with medium weight (SAE 30) oil. Brush and wipe dirt and grass from the area before applying oil. Wipe up drips and spills. Keep oil off belts and pulleys.

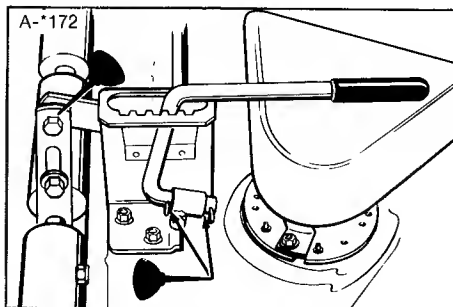


Figure 15. Lubricate height control lever & point where roller bar contacts bracket.

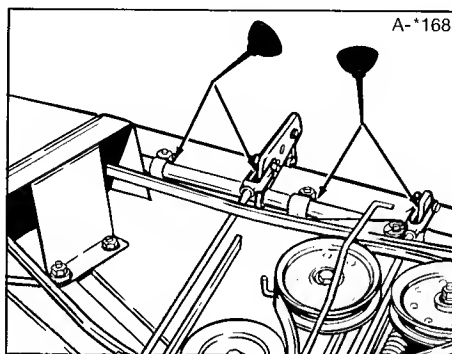


Figure 16. Lubricate clevises & points where roller bar contacts brackets.

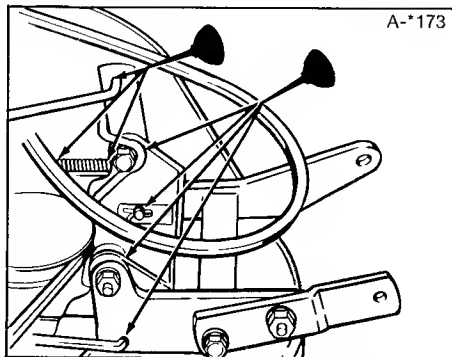


Figure 17. Lubricate hitch, PTO rod & PTO arm.

SHARPENING & BALANCING THE BLADES

1. Remove the mower from the tractor.
2. Position the mower as in figure 18. Secure the mower so it will not fall or slide.



WARNING

Do not handle the mower blades with bare hands. Avoid touching the cutting edge. Careless or improper handling of blades may result in serious injury.

3. Remove any dirt or foreign matter from inside the mower deck and blade.
4. To remove the blade for sharpening use a wooden block to hold blade while removing the capscrew (figure 18).
5. Use a file to sharpen blade to fine edge. Remove all nicks and dents in blade edge. If blade is severely damaged, it should be replaced.
6. Check and balance blade. Use a balancing machine or the fixture shown in figure 19. Center the blade on a nail lubricated with a drop of oil. A bal-

anced blade will remain level. File material off heavier end of blade until it is balanced.

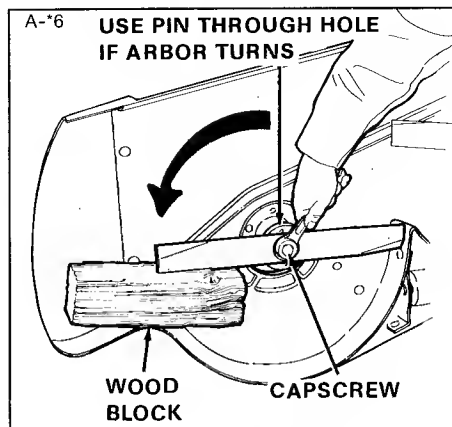


Figure 18. Removing Blade

7. Reinstall each blade with the tabs pointing up toward deck and secure with a cap screw, cup washer, and spline washer. Be sure all splines are aligned and washer is flush against blade. Use a wooden block to prevent blade rotation and torque cap screw to 55 ft. lbs. (74 N.m). (figure 20).

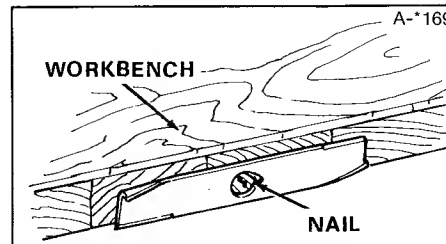


Figure 19. Balancing Blade

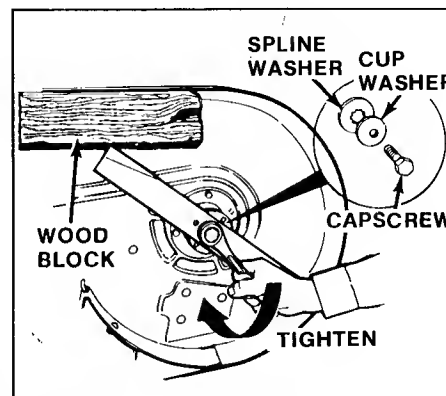


Figure 20. Installing Blade



WARNING

Blade mounting cap screws must be installed with the cup washer and spline washer and then securely tightened. Torque blade mounting cap screws to 55 ft. lbs. (74 N.m).

MOWER OFF-SEASON STORAGE

To protect your mower, store it in an enclosed dry area. To prepare the mower for off-season storage perform the following

1. Remove mower from tractor if tractor is to be used without mower. (See Mower Installation and Removal section)).
2. Clean top and underside of mower to remove all grass and dirt.
3. Coat all bare metal surfaces with a good quality paint (available from your dealer) or a light coat of oil to prevent rusting.
4. Lubricate mower (page 16).
5. Check, sharpen and balance the mower blades (page 16).
6. The belt should be stored in a cool, dark place away from sunlight or any heat source.

Troubleshooting & Repair

CONTENT OF SECTION

This section of the manual provides troubleshooting and repair instructions for the more common and easily corrected problems. For other problems, it is recommended that you contact your dealer.



WARNING

To avoid serious injury, perform maintenance on the tractor or mower only when the engine is stopped and the parking brake is engaged. Always remove the ignition key and disconnect spark plug wire and fasten away from the plug before beginning the maintenance to prevent accidental starting of the engine.

TROUBLESHOOTING PROCEDURES

Troubleshooting procedures are provided in Table 2. To use these procedures, first locate the problem description that best describes the trouble that you have encountered. Check the possible causes one at a time in the order that they are listed.

1. Engine will not start.

- A. Transmission control lever not in NEUTRAL. Move into NEUTRAL.
- B. PTO clutch lever not disengaged. Disengage fully.
- C. Operator not seated. Operator must be in seat.
- D. Out of fuel. Refill fuel tank.
- E. Engine flooded. Push in choke knob and attempt to start.
- F. Circuit breaker tripped. Wait one minute for automatic reset. Replace if defective (see your dealer).
- G. Battery terminals require cleaning. See Normal Care section.
- H. Battery discharged or dead. Recharge or replace.
- I. Wiring loose or broken. Visually check wiring & replace broken or frayed wires. Tighten loose connections.
- J. Solenoid or starter motor faulty. Repair or replace.
- K. Safety interlock switch faulty. Replace if needed. (See your dealer.)
- L. Spark plug faulty, fouled, or incorrectly gapped. Clean & gap or replace.
- M. Water in fuel tank. Drain fuel & refill with fresh fuel.
- N. Old stale gas. Drain fuel & replace with fresh fuel.

2. Engine starts hard or runs poorly.

- A. Fuel mixture too rich. Push choke knob in. If problem still exists, clean air filter.
- B. Carburetor adjusted incorrectly. See your engine manual.
- C. Spark plug faulty, fouled or incorrectly gapped. Clean and gap or replace.

Table 2. Troubleshooting

3. Engine knocks.

- A. Low oil level. Check/add oil as required.
- B. Using wrong grade oil. See Normal Care section.

4. Excessive oil consumption.

- A. Engine running too hot. Clean engine fins, blower screen and air cleaner. See Normal Care section.
- B. Using wrong weight of oil. See Normal Care section.
- C. Too much oil in crankcase. Drain excessive oil.

5. Engine exhaust is black or smoky.

- A. Dirty air filter. Clean air filter.
- B. Choke not fully open. Push choke knob in and be sure choke opens fully. If problem still exists, check carburetor adjustment.

6. Engine runs, but tractor will not drive or lacks power.

- A. Check fluid levels (transmission).
- B. Drive belt slips. (See problem and cause below.)
- C. Transmission control lever in NEUTRAL. Move into forward or reverse.

7. Drive belt slips.

- A. Pulleys or belt greasy or oily. Clean as required.
- B. Belt stretched or worn. Replace with correct belt.
- C. Clutch rod binding in guide. Oil clutch rod. See Tractor Lubrication.

8. Brake will not hold.

- A. Brake is incorrectly adjusted. See Adjustment section.
- B. Brake pads worn & require replacement. See your dealer.

9. Tractor handles poorly.

- A. Steering linkage is loose. Check and tighten any loose connections.
- B. Improper tire inflation. Check and correct.
- C. Wheels are spinning and slipping. Use weights to provide additional stability and traction.
- D. Moving too fast on slopes. Reduce speed.

10. Main tractor drive belt does not stop when clutch-brake pedal is depressed.

- A. Belt stops out of adjustment. See Adjustments section.
- B. Linkage not operating properly.

TROUBLESHOOTING (MOWER)

1. Mower will not raise.

Lift chain not attached or broken. Attach or repair.

2. Uneven cut.

- A. Mower not leveled properly. See leveling adjustment in Mower Adjustment section.
- B. Tractor tires not inflated equally or properly.

3. Mower cut is rough looking.

- A. Engine speed too slow. Set for three-fourths to full speed.
- B. Tractor ground speed too fast. Use lower gear.
- C. Front tires are over-inflated.

3. Mower cut is rough looking (cont'd)

- D. Blades dull & require sharpening. See Normal Care section.
- E. Mower drive belt slipping. Belt oily or worn. Clean or replace belt as necessary. Readjust belt tension.

4. Engine stalls easily with mower engaged.

- A. Tractor ground speed too fast. Use lower gear.
- B. Engine speed too slow. Set for three-fourths to full speed.
- C. Cutting height set too low when mowing tall grass. Cut tall grass at maximum cutting height during first pass.
- D. Discharge chute jamming with cut grass. Cut grass with discharge pointing toward previously cut area.

5. Excessive mower vibration.

- A. Blade mounting screws are loose. Torque to 55 ft. lbs. (74 N.m). See Normal Care section.
- B. Mower blades, arbors, or pulleys are bent. Check and replace as necessary.
- C. Mower blades are out of balance. Remove, sharpen, and balance blades (see Normal Care section).

6. Excessive belt breakage.

- A. Belt tension too tight. Readjust belt tension.
- B. Bent or rough pulleys. Repair or replace.
- C. Using incorrect belt. See your dealer.

7. Mower drive belt slips or fails to drive.

- A. Mower drive belt out of adjustment. See Adjustment section.
- B. Mower drive belt broken. Replace belt.

Table 2. Troubleshooting (Cont'd.)

BATTERY REPLACEMENT

A dead battery or one too weak to start the engine may not mean the battery needs to be replaced. It may, as an example, mean that the charging system is not working properly or that the battery has lost its charge during storage. First, "Clean Battery & Cables" and "Check Battery Fluid Level". Have the battery recharged if necessary. If there is any doubt about the cause of the problem, see your dealer. If you must replace the battery, remove and install the battery as described in "Clean Battery & Cables".

JUMP STARTING WITH AUXILIARY (BOOSTER) BATTERY

Jump starting is not recommended. First, check the battery as described in "Battery Replacement" above. If jump starting must be done, follow these instructions. Both booster and discharged batteries should be treated carefully when using jumper cables. Follow exactly procedures one through five, being careful not to cause sparks.



WARNING

For your personal safety use extreme care when jump starting. Never expose battery to open flame or electric spark - battery action generates hydrogen gas which is flammable and explosive. Do not allow battery acid to contact skin, eyes, fabrics, or painted surfaces. Batteries contain a sulfuric acid solution which can cause serious personal injury or property damage.

1. Set parking brake and place transmission in "NEUTRAL". Turn off lights and other electrical loads.

2. Remove vent caps from both the booster and the discharged batteries. Lay a cloth over vent wells on each battery. These two actions help reduce the explosion hazard always present in either battery when connecting a "live" battery to a "dead" battery.
3. Attach one end of one jumper cable to the positive terminal of the booster battery (identified by a red color, "+" or "P" on the battery case, post or clamp) and the other end of the same cable to positive terminal of discharged battery. DO NOT permit vehicles to touch each other, as this could establish a ground connection.
4. Attach one end of the remaining cable to the negative terminal (black color, "-" or "N") of the booster battery, and the other end to a bare metal surface on the frame of your tractor AWAY FROM the battery compartment (do not connect directly to negative post of dead battery). Take care that clamps from one cable do not inadvertently touch the clamps on the other cable. Do not lean over the battery when making this connection.

5. The tractor with the discharged battery should now start.

Reverse the jump starting procedure exactly to remove the jumper cables. Then reinstall the vent caps and throw the cloths away as they may have corrosive acid on them.



WARNING

Any procedure other than the above could result in: (1) personal injury caused by electrolyte squirting out of the battery vents, (2) personal injury or property damage due to battery explosion, (3) damage to the charging system of the booster vehicle or the immobilized vehicle.

Do not attempt to jump start a vehicle having a frozen battery because the battery may rupture or explode. If a frozen battery is suspected, examine all fill vents of the battery. If ice can be seen or if the electrolyte fluid cannot be seen, do not attempt to start with jumper cables as long as the battery remains frozen.

TRACTOR DRIVE BELT REPLACEMENT



CAUTION

To avoid damaging belt, do not pry over pulleys.

1. Engage the parking brake by latching the pedal over end of footrest.
2. Loosen the PTO pulley belt stops (G, figure 21).
3. Either remove the mower, or slip the mower belt off the PTO pulley (F).
4. Remove the tractor belt from the engine pulley and allow to rest on top of the PTO pulley.
5. Loosen the belt stop on front idler pulley (B) and remove the belt.
6. Remove the idler pulley (D) by removing capscrew and nut.
7. Remove the belt guide (I).
8. Remove the belt from the transmission pulley. Rotate fan with belt to remove belt.
9. Remove the belt from PTO pulley and tractor.

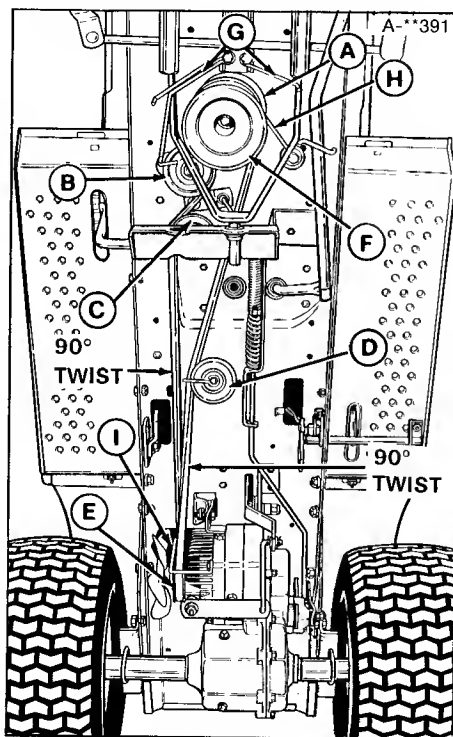


Figure 21. Tractor seen from underneath

A. Engine Pulley
B. Idler Pulley, Flat

10. Install the new belt by reversing the procedure. Be sure the V side of the belt is against all the pulleys except the flat idler pulleys (B and D). There are only two twists in the belt, as shown in figure 21. The belt diagram is shown in figure 22.
11. Refer to figure 23 to reinstall the middle idler pulley. Position flat side of belt against the pulley, position the belt guide (E, figure 23) and hardware, and install as shown. Make sure pulley can rotate freely after installation.
12. Perform "Tractor Brake Adjustment" and "Engine Pulley Belt Stops Adjustment" (page 25).

C. Idler Pulley
D. Idler Pulley, Flat
E. Transmission Pulley
F. PTO Pulley
G. PTO Pulley Belt Stops
H. Belt Stops, Engine Pulley
I. Belt Guide

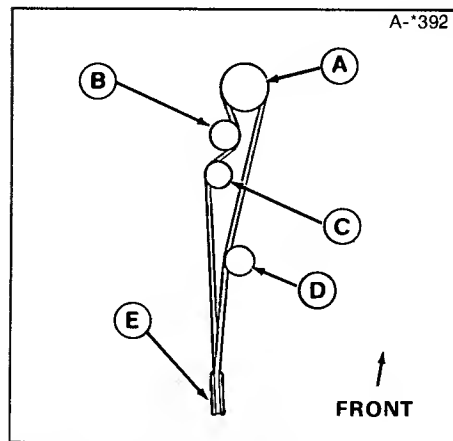


Figure 22. Belt Diagram

- A. Engine Pulley
- B. Idler Pulley
- C. Idler Pulley
- D. Idler Pulley, Middle
- E. Transmission Pulley

NOTE

Reference letters in Figure 22 are same as Figure 21.

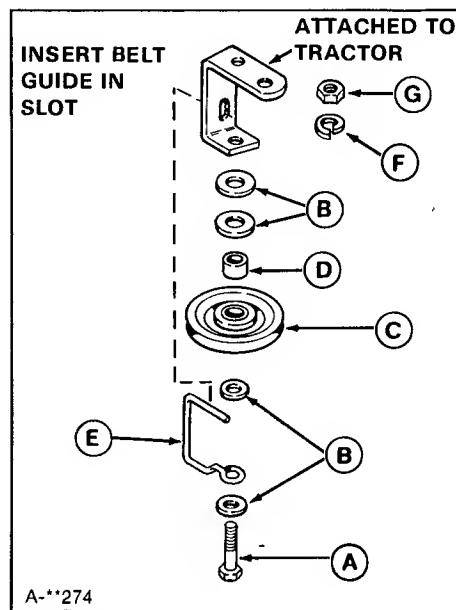


Figure 23.

- A. Capscrew
- B. Washer
- C. Pulley
- D. Spacer
- E. Belt Guide
- F. Lockwasher
- G. Nut

BELT REPLACEMENT - 42" & 48" Mower

1. Remove the mower from the tractor.
2. Loosen the left belt stop (D, figure 24) enough to slip the belt off the pulley. Remove the right belt stop (A).

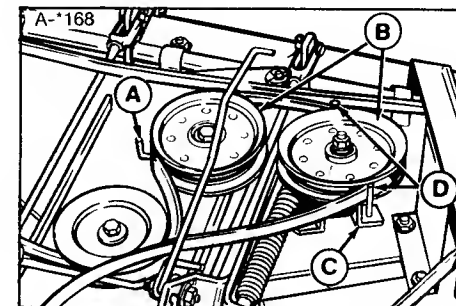


Figure 24. Mower Belt Stops

- A. Right Belt Stop
- B. Idler Pulleys
- C. Idler Pulley Bracket
- D. Left Belt Stop

NOTE

For 48" mower, go to step. 4.

3. **42" Mower Only.** Remove the right arbor cover by removing two carriage bolts in front and two capscrews in rear (see figure 25). Remove the nut (H) and

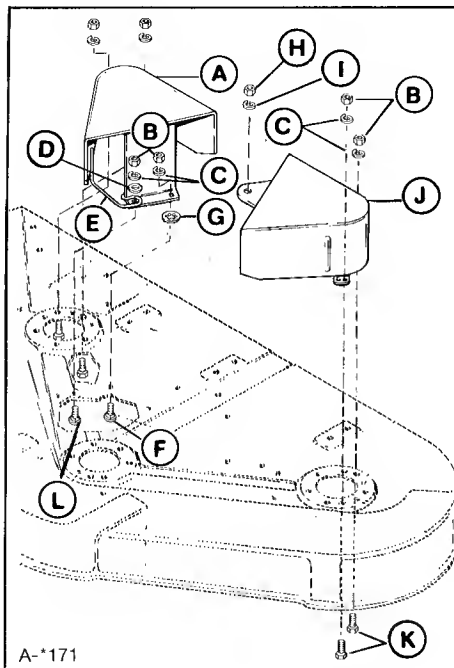


Figure 25. Arbor Covers

- A. Arbor Cover, Right
- B. Nut, 5/16
- C. Lockwasher, 5/16
- D. Plain Washer, 11/32
- E. Belt Stop
- F. Bolt, Carriage, 5/16 x 3/4

lockwasher (I) which secures left arbor cover to the idler pulley. Remove the two capscrews (K) which secure the rear of the left arbor cover.

4. **48" Mower Only.** Remove both arbor covers by removing two carriage bolts in front and two capscrews in back. See figure 22. Remove attaching hardware.
5. Remove the old belt.
6. Install the new belt on the pulleys. The belt pattern is shown in figure 26. Notice that the "V" side of belt drive the V-pulleys and flat side of belt rides on the flat idler pulleys. Be sure there are not twists in the belt.
7. Reinstall the arbor covers (step 3) and belt stop (step 2).
8. Reinstall the mower on the tractor (see Mower Installation). Check mower drive belt tension and belt stop adjustments as described in Adjustments

- G. Push Nut, 5/16
- H. Nut, 5/16
- I. Lockwasher, 5/16
- J. Arbor Cover, Left
- K. Capscrew, 5/16 x 3/4
- L. Bolt, Carriage, 5/16 x 1

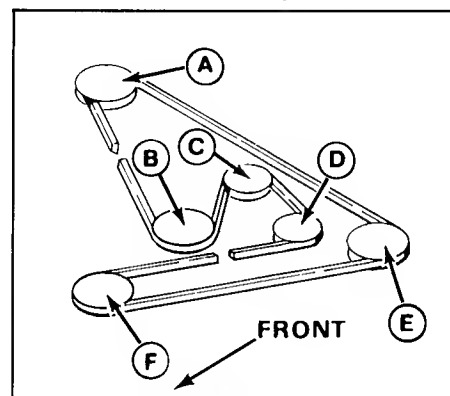


Figure 26. Belt Pattern

- A. V-Pulley, Right Arbor
- B. V-Pulley, Front Arbor
- C. Flat Idler Pulley
- D. Flat Idler Pulley
- E. V-Pulley, Left Arbor
- F. Engine PTO Pulley

section. After about two hours operation recheck mower belt tension adjustment.

Adjustments



WARNING

To avoid serious injury, perform adjustments only with engine stopped, key removed, and tractor on level ground.



WARNING

Disconnect the battery cables, negative cable first before performing adjustments. If this is not done, the electrical circuit can easily be shorted to the frame by a tool, which could cause sparks or electrical shock.

TRACTOR BRAKE ADJUSTMENT

1. Release the parking brake.
2. Put a feeler gauge just behind brake disc (figure 27). Clearance between disc and pad should be 0.010 inch (0.254 mm). If not, tighten or loosen the adjustment nut (B) to achieve correct dimension. Some units are equipped with two nuts. If so, loosen the outer nut, adjust the inner nut as necessary, then tighten outer nut.

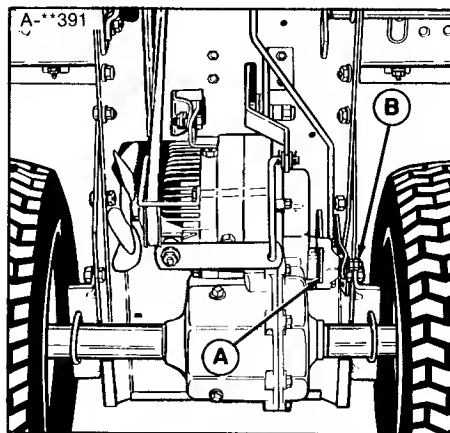


Figure 27. Brake Adjustment

- A. Insert Feeler Gauge
B. Adjustment Nut

3. With the rod guide (A, figure 28) on brake rod as far rearward as slot will allow, the nut (D) should be snug against spring (C), but spring should still be able to rotate. Tighten or loosen nut as necessary to achieve this.

ENGINE PULLEY BELT STOPS

Adjust the two belt stops (A, figure 29) so there is 1/8" between belt stops and belt.

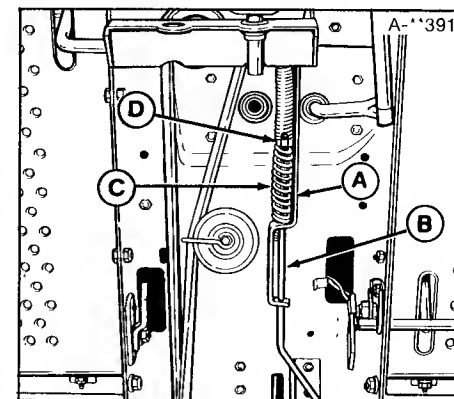


Figure 28. Brake Adjustment

- A. Rod Guide
B. Brake Rod
C. Spring
D. Nut

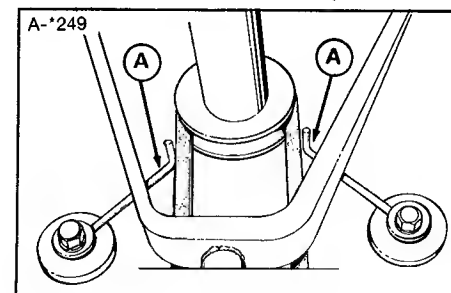


Figure 29. Engine Pulley Belt Stops

NEUTRAL ADJUSTMENT

If the tractor creeps forward or back with transmission in neutral notch, adjust as follows.

1. Seat yourself in the operator's seat and start the engine.
2. Move the lever to position where tractor remains stationary. This is neutral position.
3. Stop the engine.
4. Disconnect the battery cables to avoid causing short circuit or sparks with tools.
5. The control lever quadrant (A, figure 30) is mounted with slotted holes so it can be adjusted. Loosen the two self-tapping screws and move the quadrant so the lever is in neutral notch. Then tighten the two screws.
6. Connect the battery cables.
7. Lower the seat deck. Start the engine to check again. If the tractor still creeps in neutral, repeat the procedure to adjust.

TRANSMISSION CONTROL LEVER

If lever operates too hard or loose, it can be adjusted. Loosen or tighten the nut (B,

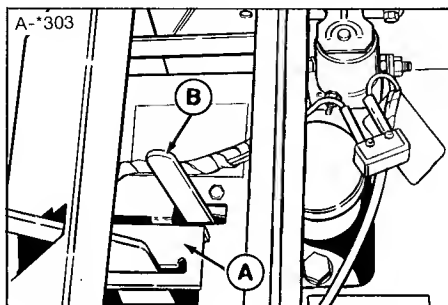


Figure 30. Control Lever Quadrant

A. Quadrant

B. Transmission Engagement Lever

figure 31) to loosen or tighten the lever. Some models are equipped with setscrews (C) which must be loosened to adjust nut then retightened.

TRANSMISSION ENGAGEMENT LEVER

If transmission engagement lever (under seat) does not work properly, check the adjustment as follows.

1. Release the parking brake.
2. Place the transmission control lever in NEUTRAL.
3. Place the transmission engagement lever (B, figure 30) in forward position (disengaged position).

4. Locate the plunger (A, figure 31) on front of the transmission which is operated by the lever. Check the clearance between the plunger and the fitting as shown in the detail in figure 31. It should be 0.060 inch to 0.125 inch.

5. To adjust, loosen the engagement lever bracket (D) screws and move to achieve the 0.060 to 0.125 inch dimension. Tighten the screws.

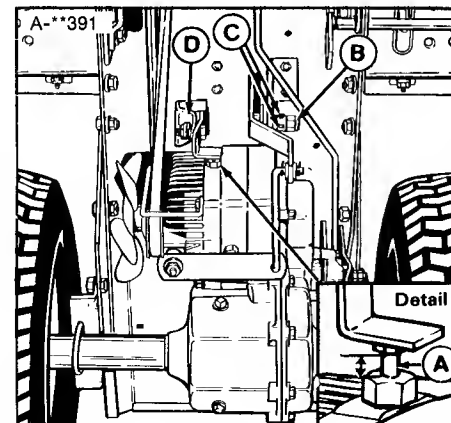


Figure 31. Engagement Lever Adjustment

A. Plunger
B. Nut

C. Setscrew (Some models)
D. Bracket

MOWER ADJUSTMENTS - ALL MODELS

Mower Drive Belt Tension Adjustment - All Models

If the mower belt slips or fails to drive, the mower belt tension may need adjustment. To check, proceed as follows.

1. Place the mower in high cut, using height control lever. Place the PTO lever in engaged position.
2. Measure the distance between the PTO rod guide (A, figure 32) and the set collar (B). For the 36" mower, the measurement should be 3/8 to 1/2 inch (10 to 13 mm). For the 42" & 48" mower, the measurement should be one inch (25.4 mm).
3. Place the PTO lever in disengaged position.
4. Loosen the setscrew in the set collar (B). Move the rod (G) forward to increase gap, or backward to decrease gap. Retighten the setscrew.

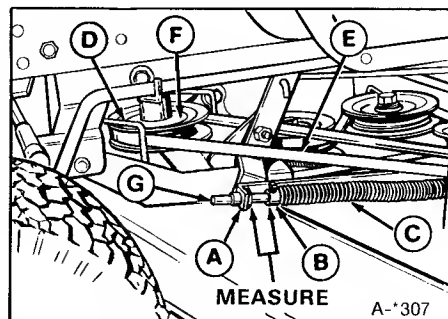


Figure 32. Mower Belt Adjustment

- | | |
|---------------|---------------|
| A. Rod Guide | E. Belt |
| B. Set Collar | F. PTO Pulley |
| C. Spring | G. Rod |
| D. Belt Stop | |

5. Repeat the adjustment as necessary until the distance measures as described in step 2 with the PTO lever in engaged position.
6. Check the adjustments of the PTO pulley belt stops and the mower belt stops.

PTO Pulley Belt Stops Adjustment - All Models

There are two belt stops at the PTO pulley; one on the left (D, figure 32) and one on the

right (figure 33 or figure 34). With the PTO lever engaged, measure the distance between the belt stop and belt. There should be 1/16 inch (1.5 mm) clearance between each belt stop and the belt. To adjust a belt stop, loosen its mounting capscrew, move the belt stop, and retighten the capscrew. Recheck the measurement. If a 1/16 inch clearance cannot be achieved without touching the pulley, place belt stop as close as possible without touching pulley.

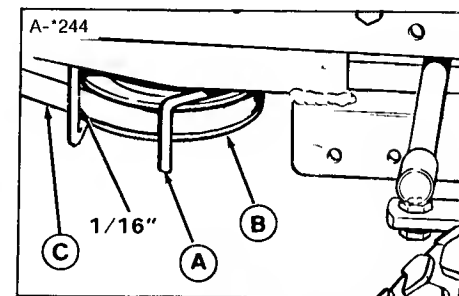


Figure 33. Right Hand Belt Stop, PTO Pulley - 42" Mower

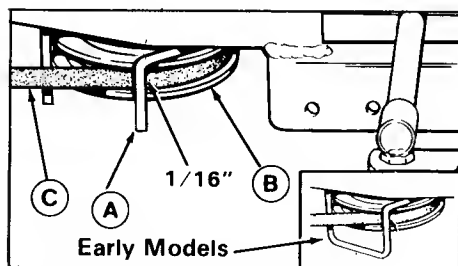
- | |
|--------------|
| A. Belt Stop |
| B. Pulley |
| C. Belt |

MOWER ADJUSTMENTS - 42" & 48" MOWER

Mower Belt Stops

Right Idler Pulley Belt Stop. Make sure the long side of the right belt stop (A, figure 35) is inserted in idler pivot bracket slot (C). There is no adjustment.

Left Idler Pulley Belt Stop. Make sure the belt stop (D) is level with the pulley. If the belt stop is level, each side will be an equal distance from the belt. To reposition the belt stop, loosen the mounting capcrew on the bracket underneath the pulley. Retighten hardware securely.



**Figure 34. Right Hand Belt Stop,
PTO Pulley - 36" Mower**

A. Belt Stop C. Belt
B. PTO Pulley

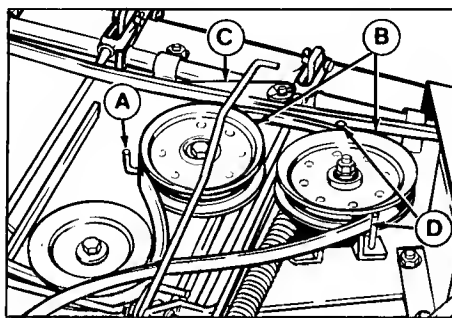


Figure 35. Mower Belt Stops

A. Right Belt Stop C. Idler Pivot Bracket
B. Idler Pulleys D. Left Belt Stop

MOWER LEVELLING - 42" & 48" Mower



WARNING

To avoid accidental starting during levelling check, remove the ignition key and remove both spark plug wires and fasten them away from the spark plugs.

NOTE

The purpose of levelling the mower is to achieve an even grass cut. Remember that improper or unequal tire pressure will cause an uneven cut. Also, different terrain may require different side-to-side adjustments. If you don't achieve an even cut with the mower level, try raising one side slightly higher.

Mower Levelling, Side-to-Side - 42" & 48" Mower

1. Tractor and mower must be on a level surface. The tires must point straight forward.
2. Place the mower in highest cutting position and place the mower lift lever in the lowered position.
3. Disengage the mower PTO and position the blades so they are pointing side-to-side.
4. Engage the PTO.
5. Measure the distance from the outside tips of the blade to the ground. If the difference between the two measurements is less than 1/8 inch (3 mm), the mower is level. If not, proceed with next steps.

NOTE

It will be easier to make adjustments with mower in lowest cutting position. To recheck measurements, reposition mower in highest cutting position.

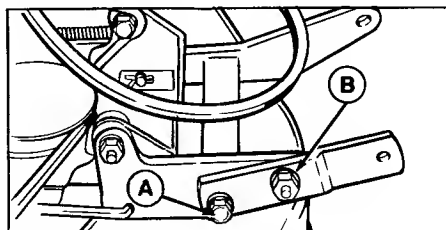


Figure 36. Mower Hitch
(shown removed from tractor)

A. Capscrews B. Flange Nuts

6. Loosen the cap screw (A, figure 36) and flange nut (B) in the right mower hitch.
7. Loosen the shoulder bolt (A, figure 37) and raise or lower mower as necessary to level it. Retighten the shoulder bolt. Torque to 40 ft. lbs.
8. Retighten the cap screw and flange nut (B, figure 36). Torque cap screw (A) to 50 ft. lbs. Torque nut (B) to 65 ft. lbs.
9. Check the measurements and readjust as necessary.
10. Check Mower Levelling, Front-to-Back, as described in the following procedure.

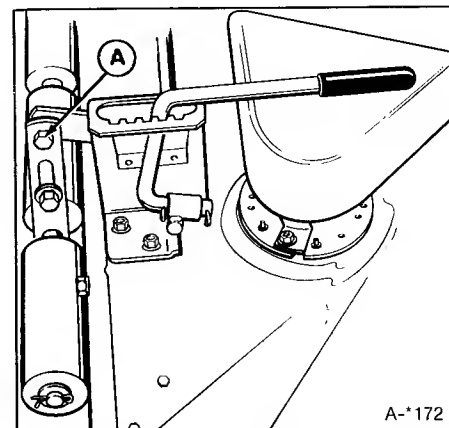


Figure 37. Shoulder Bolt

A. Shoulder Bolt

Mower Levelling, Front-To-Back



WARNING

To avoid accidental starting during leveling check, remove the ignition key and then remove both plug wires and fasten them away from the spark plugs.

1. Place tractor and mower on a level surface. Check side-to-side adjustment first.

2. Place the mower in the highest cutting position, and place the mower lift lever in the lowered position. The front tires must point straight forward.
3. Arrange the blades so that they are pointing forward and back, parallel with the tractor. Engage the mower PTO.
4. Measure the distance from the front tip of the center blade to the ground, and note that measurement. (See figure 38).
5. Measure the distance to the ground from the rear tips of the left and right blades. Compare these measurements with the measurement from the front tip of the center blade. The front tip of the center blade should be 1/4 inch (6 mm) higher than the rear tips of the side blades (figure 38).

NOTE

It will be easier to make adjustments with mower in lower cutting position. To recheck measurements, reposition mower in highest cutting position.

6. If adjustment is needed, remove the two pins. (A, figure 39) by removing the cotter pins. Loosen the jam nuts (C).
7. Turn both turnbuckles the same number of turns, shortening the bail arm to raise the front of the mower and lengthening the bail arms to lower the front of the mower. (One full turn of the eyebolt will equal about 1/8 inch.)
8. Replace pins through turnbuckles and height adjustment arm and recheck measurements. When the proper measurement is reached, install new cotter pins through the pins and tighten the jam nuts to the turnbuckles.

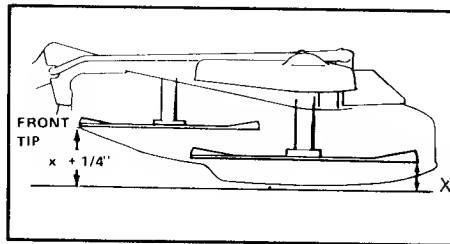


Figure 38. Levelling Mower

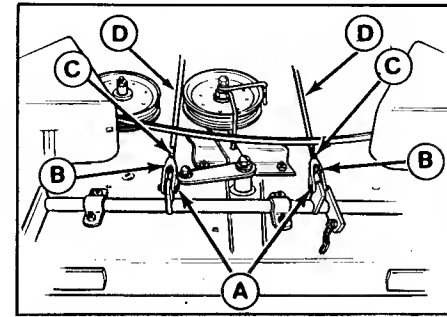


Figure 39. Turnbuckles

A. Pins C. Jam Nuts
B. Turnbuckles D. Bail Arms

MOWER ADJUSTMENTS - 36" MOWER

Mower Levelling - 36" Mower

If the 36 inch mower is giving an uneven cut, or if one side of the mower cuts at a different height than the other side, then the mower needs levelling. Remember improper tire pressure can also cause an uneven cut. To level the mower, proceed as follows:



WARNING

To avoid accidental starting during leveling check, remove ignition key and remove both spark plug wires and fasten them away from the spark plugs.

1. With the mower installed, place the tractor on a smooth level surface, such as a concrete floor.
2. Check for bent blades, and replace if necessary.
3. Arrange the mower blades so that they are both pointing from side-to-side perpendicular to the tractor. Engage the clutch.
4. Measure the distance between the outside tips of each blade and the ground. If there is more than 1/8 inch (3 mm) difference between the measurements on each side, proceed to step 5. If there is 1/8 inch or less difference proceed to step 6.
5. Remove the cotter pin holding on the mower levelling rod (figure 40). Shorten the rod to raise the left side of the mower, or lengthen the rod to lower the left side of the mower. Put the levelling rod back in its hold and recheck the measurements. When both sides are the same height, replace the cotter pin in the levelling rod.
6. Disengage mower clutch then arrange the blades so they are facing front to back, parallel with the tractor. Engage mower clutch again.
7. Measure the distance to the ground from the front tip of the left blade and the rear tip of the right blade. The measurements should be equal. If they are not, proceed as follows.
8. Remove the cotter pins and pins from the hitch clevises (figure 40). Turn each clevis an equal number of turns in the same direction. Shorten the hitch rods to raise the front of the mower, lengthen the hitch rods to lower the front of the mower.
9. Replace pins through clevises and rear suspension arm and recheck measurements. When the mower is level replace and spread cotter pins, and tighten nuts against clevises.

36" Mower Belt Stop Adjustment

There is a belt stop at both arbor pulleys. The right-hand arbor belt stop is shown in figure 41. Both belt stops should be 1/8 inch (3 mm) from belt when belt is engaged. Loosen nut to adjust.

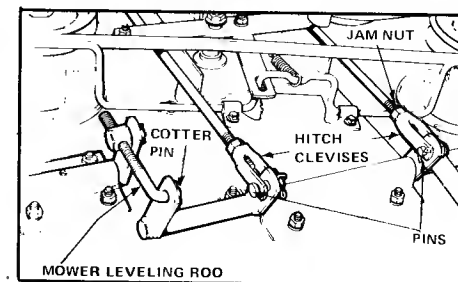


Figure 40. Levelling Mower

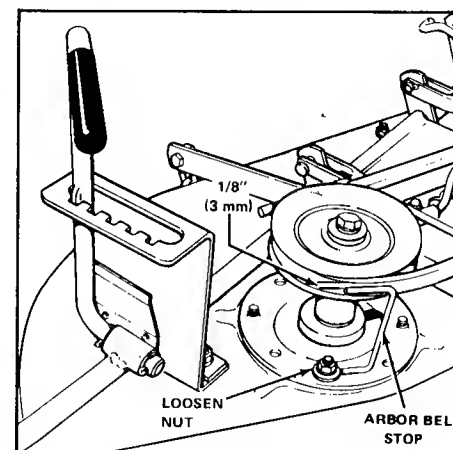


Figure 41. Right Arbor Belt Stop Adjustment - 36" Mower

Idler Pulley Belt Guide

Adjust guide to obtain 1/4 inch (6 mm) from idler arm (figure 42). Loosen nut (C) to adjust. Recheck measurement.

SMALL LIFT LEVER - 36" MOWER

NOTE

Use this procedure if small lift lever (E, figure 7, page 8) is used.

1. Place the mower in low cut position. Using the lift lever, raise the mower.
2. Measure the distance between top of upstop bracket and bottom of footrest (figure 43). The measurement should be 3-1/4".
3. To adjust, disconnect clevis (E, figure 43). Loosen the nut, and turn clevis to raise or lower mower. Tighten nut when measurement is correct.

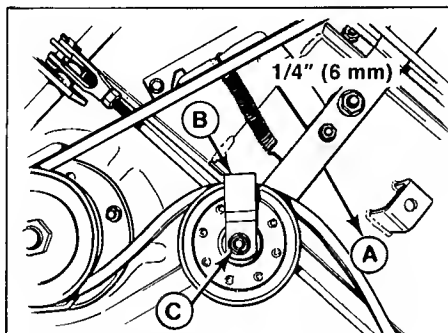
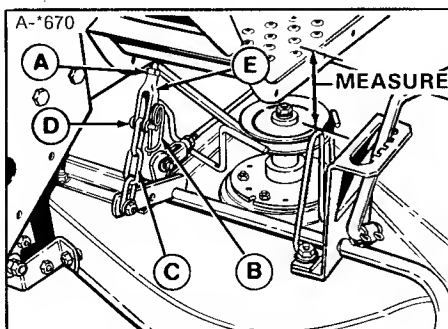


Figure 42. Idler Pulley Belt Guide

A. PTO Idler Arm
B. Belt Guide
C. Nut



Lever 43. Lift Assembly - Small Lift Lever

A. Nut
B. Clip
C. Chain
D. Pin
E. Clevis

LARGE LIFT LEVER - 36" MOWER

NOTE

Use this procedure if large lift lever (B, figure 7, page 8) is used.

1. Place the mower in low cut position. Using the lift lever, raise the mower.
2. Measure the distance from bottom edge of lever bracket to mower deck (figure 44).

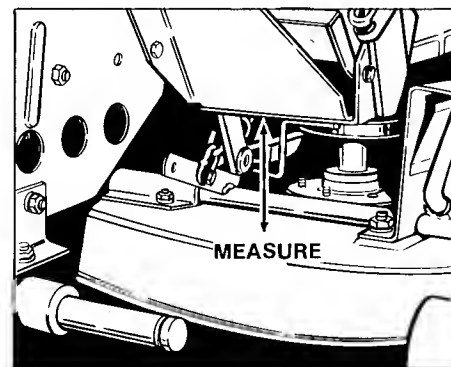


Figure 44. Measurement - Large Lift Lever - 36" Mower

3. The measurement should be 6". To adjust, disconnect trunnion (figure 45) from chain. Loosen the nut (B) and turn the trunnion to raise or lower mower. Tighten nut when measurement is correct.

LIFT LEVER - 42" & 48" MOWER

1. Place the mower in low cut position. Using the lift lever, raise the mower.

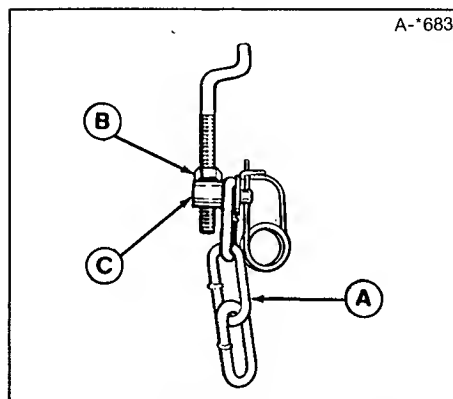


Figure 45. Lift Assembly - Large Lift Lever

A. Chain B. Nut C. Trunnion

2. Measure the distance between top of pulley cover and bottom of upstop bracket (figure 46). If small lift lever (E, figure 7) is used, the measurement should be 2". If large lift lever (B, figure 7) is used, the measurement should be 1-13/16".

NOTE

In the next step, refer to figure 43 if small lift lever is used or figure 45 if large lift lever is used.

3. To adjust, disconnect clevis (E, figure 43) or trunnion (C, figure 45) from chain. Loosen the nut, and turn clevis or trunnion to raise or lower mower. Tighten nut when measurement is correct.

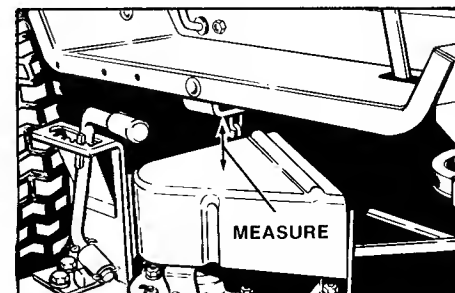


Figure 46. Measurement - 42" Mower

Specifications

BASIC ENGINE

Make: Briggs & Stratton - 4 cycle, air cooled

Model: 616H: 402707; 613H: 404707

Type: 616H 0132-01; 613H: 0122-01

Horsepower: 616H: 16 HP @ 3600 rpm (Eng. Mfg's. Rating)
613H: 12.5 HP @ 3600 rpm (Eng. Mfg's. Rating)

Cylinder: 2 horizontally opposed

Bore & Stroke: 3.44 x 2.16 inches (87 x 52 mm)

Displacement: 40 cu. in. (655 cc)

Crankshaft: Vertical

Battery: 12 volt, 39 amp. hour

Governor: Mechanical, full throttle - no load setting
@ 3400 \pm 100 rpm; idle speed @ 1350 \pm 100 rpm

Crankcase Capacity: See engine manual

Ignition: Magneton

Charging: Unregulated 3-amp DC charging circuit

Air Cleaner: Oil foam with reusable polyurethane element

Fuel Tank: 2.2 gallons (8.3 liters) of "regular" grade leaded
or unleaded gasoline.

Starter: 12 volt electric gear drive

TRANSMISSION

Type: Belt drive to hydrostatic transmission

Differential: Gear reduction unit with bevel gears.

Ground speeds @ 3400 rpm:

Forward - 0 - 5.25 mph

Reverse - 0 to 3.00 mph

DIMENSIONS & WEIGHT

Height (at steering wheel): 41 in. (1040 mm)

Width: 34.80 in. (880 mm)

Length: 66.25 in. (1680 mm)

Clearance - Front Axle: 10.2 in. (260 mm)

Clearance - Transmission: 6.25 in. (410 mm)

Wheel Base: 48.1 in. (1220 mm)

Turning Radius: 24 in. (610 mm) to inside of rear wheel

Front Tires: 13 x 6.50 x 6 Pneumatic

Rear Tires: 20 x 10 x 10 or 20 x 8 x 10 Pneumatic

Tractor Weight: 420 lbs. (190 Kg)

36" Mower Weight: 81.5 lbs. (36.7 kg)

42" Mower Weight: 114 lbs. (51.3 kg)

48" Mower Weight: 123 lbs. (55.8 kg)

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.

DEUTZ-ALLIS Corporation
P.O. Box 933
Milwaukee, WI 53201

